PILOT PROJECT TO ADDRESS MERCURY DEPOSITION TO WATERBODIES THROUGH TOTAL MAXIMUM DAILY LOADS
(Short Title: Mercury TMDL Air Deposition Pilot)

Description of Pilot Project

- The Environmental Protection Agency (EPA) is beginning a $400,000 pilot project to evaluate methods for addressing the deposition of mercury from air sources to waterbodies. The project is a cooperative, voluntary effort with the States of Wisconsin and Florida.

- The pilot will be conducted on Devil's Lake in Wisconsin (a small lake near Madison, Wisconsin), and a portion of the Florida Everglades (30 miles west of Miami, Florida). Both of these waterbodies are on the States' lists of "impaired" waterbodies, and have fish consumption advisories due to high levels of mercury in fish.

- During the project, EPA and the States will investigate the relationship between air emissions of mercury and water quality impacts. The goal of the project is to examine approaches for taking air sources into account when determining total maximum daily loads (TMDLs) (see background on TMDLs below).

- For each of the pilot waterbodies, the project will evaluate techniques for 1) determining the amount of mercury reductions needed to meet water quality standards; 2) determining the relative contributions of mercury from various sources (e.g., wastewater effluent or direct discharges to water, as well as air deposition from combustion processes, manufacturing operations, and natural sources; and 3) the geographic extent of sources contributing mercury (how much deposition is from local as compared to distant sources).

- The project also will analyze Federal and State programs for reducing mercury emissions that may be causing water quality problems. This effort will help EPA, the States, and Tribes determine how their air and water programs can jointly develop appropriate actions to address waterbodies impaired by air deposition of mercury. The analysis will take into account mercury emission limits currently being implemented.

- EPA plans to issue findings from the project in about a year.

Background on Total Maximum Daily Loads

- Under the Clean Water Act (Section 303(d)), EPA focuses on identifying and restoring the Nation's polluted waterbodies. Under this authority, States are directed to (1) identify and list waterbodies where State water quality standards are not being met and (2) establish "Total Maximum Daily Loads" for those waters.

- Total Maximum Daily Loads (TMDLs) specify the amount of a pollutant that may be present in the water and still allow the waterbody to meet State water quality standards. TMDLs allocate pollutant loads among pollution sources (e.g., point and nonpoint sources), and include a margin of safety that accounts for uncertainty in the relationship between pollutant loads and characteristics of the waterbody.

- TMDLs are not directly implemented or enforceable against sources in a watershed. Rather, they are implemented through other Federal, State, Tribal, and local authorities, such as point source discharge permits, federal land management plans, State nonpoint source programs, and local zoning programs.

- The year 2000 is the next year that States are directed to issue their lists of impaired waterbodies and establish "Total Maximum Daily Loads" for those waters. The pilot project will test methods that can assist the States of Wisconsin and Florida, as well as other States and Tribes, in the development of TMDLs for mercury from air sources.

Why is Mercury a Concern for Waterbodies?

- Mercury is a metal that is emitted into the air from both natural and human sources, including fossil fuel combustion and manufacturing processes, and can also be discharged to water directly in wastewater. In the aquatic environment, mercury exists as inorganic and organic mercury (e.g., methylmercury). Methylmercury, the most toxic form of mercury, is known to cause neurological and behavioral effects in humans and other mammals, and damage to key organs such as the heart, lung, liver, kidney, and stomach. Young children and the developing fetus are at greatest risk. Methylmercury can also affect reproduction in fish-eating birds.

- Methylmercury can bioaccumulate in the tissues of aquatic organisms and biomagnify in the food web. The concentration of a pollutant at the top of the food web (for example, predatory fish, fish-eating birds and mammals, as well as humans who eat fish) can be thousands or even millions of times greater than the concentration of the pollutant found in water. The food web pathway is the only source of human exposure to methylmercury.

- States have identified atmospheric deposition of mercury as a major cause of water quality problems in the nation's waters. In the list of "impaired" waters developed by States in 1996, over 2,000 waterbodies were estimated as having possible impairments due to mercury and other metals.

For Further Information

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